



Vortex Hydro Energy LLC
2512 Carpenter Road, Suite 101-C
Ann Arbor, Michigan 48108
T: (734) 223-4223, F: (734) 944-4072
www.vortexhydroenergy.com

Vortex Hydro Energy and Its Revolutionary Energy Producing Technology

Key Points

The Company

Vortex Hydro Energy (VHE) is a renewable energy company dedicated to providing greenhouse gas free, cost effective electricity and safe water to the people of the world. It is located in Ann Arbor, Michigan and its product is based on technology invented at the University of Michigan.

The Technology

Our technology, nicknamed VIVACE, relies on the extensively studied phenomenon of vortex induced vibrations to extract useful energy from ocean and other water currents. VIVACE can cost competitively, generate electricity or pump water in a non-obtrusive, environmentally friendly (carbon free) manner.

Economic Benefit to the State of Michigan

Success of VIVACE and VHE will yield wide spread economic benefits in Michigan, across the country and internationally. Development of VIVACE will also bolster domestic energy security and mitigate global climate change. As VHE and the development of VIVACE progresses, it is projected that:

- Over 600 jobs will be created by 2015, with the bulk in the State of Michigan
- Annual revenues exceeding \$190 million will be generated by 2015
- VIVACE development will spur the investment of approximately \$50 million.

Commercial and Military Benefits

In general, VIVACE will benefit the U.S. by improving energy security and mitigating the emissions of greenhouse gases and other pollutants. VIVACE units produce clean, greenhouse gas free power from flowing water resources. The projected installed capacity of VIVACE in 2015 is over 1.6 GW. Compared to the average generating technology on the domestic electrical grid, this will offset 151,000 tons of sulfur oxides, 92,000 tons of nitrogen oxides and 63 million equivalent tons of carbon dioxide. This is equivalent to over 6 million barrels of imported oil.

There are numerous military applications and benefits to a fully developed system. These include:

- Generation of clean/renewable energy to serve the soldier in the field
- Direct water pumping
- Power for Instrumentation stations, off-shore stations, idle ships, and coastal naval bases

The Need for Additional Federal Funding

While VHE has a small amount of funding to carry out additional R&D on the technology (a working system is in operation at a UM laboratory), significant funding is needed to develop a robust prototype to prove the concept's feasibility in a real-world environment. The cost of developing and testing the prototype is approximately \$2 million. VHE is partnering with the Detroit /Wayne County Port Authority to test out the prototype in the Detroit River. The requested federal funding, via DOD TACOM, is essential to carrying this out.

Points of Contact:

Dr. Michael Bernitsas, VHE CEO and UM Professor, 734-764-9317, michaelb@umich.edu
Dr. James MacBain, President, 734-645-8990, jmacbain@umich.edu